Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of:	)	
	)	
Wireless E911 Location Accuracy Requirements	)	**PS Docket No. 07-114**
	)	
	)	

REPLY COMMENTS OF
POLARIS WIRELESS, INC.
(June 18, 2019)

Polaris Wireless, Inc. ("Polaris Wireless") submits the following Reply Comments to the Commission's Wireless E911 Location Accuracy Requirements, *Fourth Further Notice of Proposed Rulemaking*, on a vertical (z-axis) location accuracy metric.[1]

I. CONSENSUS ON 3-METER ACCURACY

There is a clear consensus on establishing a 3-meter z-axis metric. This is the level generally sought by the Public Safety community,[2] agreeable by two wireless carriers,[3] and achievable by at least two technology vendors.[4] Weakening the metric to 4 meters[5] is not necessary and will not satisfy the Commission's public safety objectives. Additionally, narrowing the metric to 2 meters[6] is premature at this time. Proceeding with a 3-meter metric, as the Commission

[1] *Wireless E911 Location Accuracy Requirements*, Fourth Further Notice of Proposed Rulemaking, PS Docket No. 07-114, FCC 19-20 (released March 18, 2019).

[2] Comments from The International Association of Fire Chiefs *et al*, at 2-3 (May 20, 2019); Comments of The International Association of Fire Fighters, at 1-2 (May 20, 2019); Comments of Texas 9-1-1 Alliance *et al*, at 2-3 (May 20, 2019); Comments of State of Florida Department of Management Services, Division of Telecommunications, Bureau of Public Safety (June 4, 2019).

[3] Comments of AT&T, at 2-3 (May 20, 2019); Comments of Verizon, at 2-4 (May 20, 2019); *see also* Comments of CTIA, at 4-5 (May 20, 2019).

[4] Comments of Polaris Wireless, at 5-6 (October 11, 2018); Comments of NextNav, at 2-7 (May 20, 2019).

[5] Comments of Google, at 10-11 (May 20, 2019).

[6] Comments of the Boulder Regional Emergency Telephone Service Authority, at 4-5 (May 20, 2019).

proposes in this *Fourth Further Notice of Proposed Rulemaking*, is the most prudent course of action.

II. FURTHER TESTING NOT NEEDED TO ESTABLISH A Z-AXIS METRIC

There is no need to wait for further testing prior to establishing a z-axis metric. Certainly, development and testing of additional vendors and additional technologies will continue as devices, networks, and reference databases evolve. In fact, Polaris Wireless remains committed to innovating technology for improving indoor and vertical accuracy by advancing barometric-based algorithms and by introducing other location techniques to serve the needs of E911 callers as well as First Responders. But there is no need for further delay in establishing a benchmark for z-axis location accuracy. Doing so would only undermine the public safety objectives of the Commission.

III. BAROMETRIC-BASED LOCATION TECHNIQUES AND CONSIDERATIONS

Both z-axis vendor solutions currently incorporate barometric pressure sensor location techniques. As a result, the Commission should consider this dependency when evaluating compliance by wireless carriers.[7] Furthermore, barometric-based location techniques require certain information to compensate for intrinsic bias in barometric sensors. This bias varies by sensor manufacturer, device model, and even individual devices. There are several methods available to estimate the bias all of which require algorithms resident on the device and / or on a location server along with signaling between the device and network that involve either existing standards, standards currently under definition, or proprietary approaches.[8] These approaches

[7] Comments of CTIA, at 8-9 (May 20, 2019).

[8] Letter from James Arden Barnett, Jr., Counsel to Polaris Wireless, Inc., to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07-114, at 3 (filed Sept. 10, 2018).

require support from some combination of chipset makers, device (OEMs) and Operating System providers.[9]

IV. POLARIS WIRELESS DELIVERS 3-METER ACCURACY

Polaris Wireless' software-based solution delivers affordable and scalable 3-meter z-axis location accuracy. Polaris Wireless uses specific, publicly available, weather reference data, supplemented with selectively deployed, commercial weather stations. Doing so achieves necessary accuracy while minimizing cost and complexity.

Additionally, Polaris Wireless offers a response to two other points of discussion from filed Comments. First, Polaris Wireless can deliver uncertainty values for its vertical axis location estimates, similar to how uncertainty is delivered today for horizontal location.[10] Second, many of the Comments in this proceeding have addressed the method in which z-axis technology is delivered, e.g., Height Above WGS-84 Ellipsoid (HAE), Height Above Mean Sea Level (AMSL), and Height Above Ground Level (AGL).[11] Polaris Wireless can support any standards-based approach, but notes that AGL relies on terrain data that might be inconsistent and could potentially introduce errors in results. Current standards generally call for HAE.

Polaris Wireless offers an objectively affordable solution and is committed to working with wireless carriers to minimize their cost of delivering z-axis location for E911 purposes.

CONCLUSION

Polaris Wireless acknowledges and appreciates the significance and magnitude of these proceedings. A 3-meter z-axis metric, as proposed by the Commission, will improve emergency

[9] Comments of AT&T, at 1-2 (May 20, 2019); Comments of Verizon, at 3-5 (May 20, 2019).

[10] Comments of NENA: The 9-1-1 Association, at 4 (May 20, 2019); Comments of APCO International, at 4 (May 20, 2019).

[11] Comments of NENA: The 9-1-1 Association, at 2-4 (May 20, 2019).

caller location accuracy, improve response times, and save lives. Getting to this point has not come easily to the stakeholders participating in these proceedings, and there is still additional work to be accomplished. Nevertheless, a 3-meter z-axis metric is desired, supported, and achievable within the current timelines, and is the prudent next step for serving public safety.

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Respectfully submitted;

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